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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,064	01/04/2002	Pierre-Yves Corre	15675P373	9692

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EXAMINER

POE, MICHAEL I

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,064

Applicant(s)

CORRE ET AL.

Examiner

Michael I Poe

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 6-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the instant case, the abstract contains phrases that can be implied (e.g., "The invention concerns") and form and legal phraseology (e.g., "said"). The abstract should be amended in response to this Office action to correct these deficiencies.

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

Art Unit: 1732

(a) TITLE OF THE INVENTION.

(b) CROSS-REFERENCE TO RELATED APPLICATIONS.

(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.

(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

(See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or

REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. On page 11, lines 9-11, the applicant incorporates foreign patent publication WO-94/25655 by reference. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re*

Art Unit: 1732

Hawkins, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

Claim Objections

5. Claims 6-9 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n).

Accordingly, the claims 6-9 ^{have} not been further treated on the merits.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-5 and 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 10 include the recitation "which is initially folded on itself and flattened in the manner of a fire hose empty of water". This recitation is confusing because it would be unclear to one reading the claims what type of flattened condition the preform must be in to meet this recitation. Specifically, it is unclear if a flattened preform coiled on a roll or spindle would be readable on this recitation. For the purpose of this Office action, the examiner has assumed that any tubular preform coiled on a roll or spindle would be encompassed by this recitation.

Claim 10 includes the recitation "means (93) capable of causing the resin to cure". This recitation is confusing because it would be unclear to one reading the claim whether or not the applicant was intending to claim a particular means or to invoke a "means plus function" limitation. For the purpose of this Office action, the examiner has assumed that the applicant was claiming means for causing the resin to cure thereby invoking a "means plus function" limitation.

Claim 10 recites the limitation "the support" in lines 12 and 13. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 1732

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 10, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,752,431 (Knowles) in view of U.S. Patent No. 4,182,262 (Everson et al.) and U.S. Patent No. 830,204 (Boyle).

Claims 1-4

Knowles teaches a method of installing a permanent conforming pipe (a process for laying a cylindrical pipe) for conducting fluids on soil 7 or in a trench or hole 8 (in a trench open at the top) including forming a pipe 1 (flexible tubular preform) including outer and inner spaced parallel skins or surfaces 2 and 3 having an intermediate reinforcing layer 4 secured or sandwiched there between to form a tubular wall W (the wall of which includes a filamentary reinforcement surrounding an inner sealing skin; the section of preform is coated with a protective tubular sheath, after its reinforcement has been impregnated with the curable substance, before the preform is deposited in the trench); storing the pipe 1 by winding the flattened pipe on a long spindle (which is initially folded on itself and flattened in the manner of a fire hose empty of water); providing a pipe 1 in a flexible state (starting from a section of flexible tubular preform) by unwinding the pipe 1 from the long spindle into the trench (the section of preform is brought close to the trench; this laying process is carried out with the wall of the preform being turned over on itself); laying the pipe 1 out over a supporting surface such as soil 7 or in a hole or trench 8 such that the pipe 1 flexibly conforms to the surface irregularities of the supporting surface (the section of preform still in the flattened state is deposited from the top down into the trench); expanding the pipe 1 to a desired shape after laying (capable of being made round but not radially expansible by inflation due to the effect of internal pressure; the section of preform is inflated, after having closed off the ends thereof, so as to give it a cylindrical shape); curing the pipe 1 to rigidify the pipe 1 (made to cure); and backfilling the trench 8 to cover the pipe 1 (column 3, lines 1-18; column 4, lines 23-34; column 5, line 37

Art Unit: 1732

- column 6, line 2). Knowles further teaches that the reinforcing layer 4 may be a fibrous-web mat imbedded in cement (the reinforcement is impregnated with a curable material) (column 3, line 56 - column 4, line 4).

Knowles does not specifically teach that the reinforcement is impregnated in situ with a curable resin, that the impregnation of the resin is carried out under reduced pressure, and that a thermosetting resin is used. However, Everson et al. teach a method for impregnating a tube (flexible tubular preform) comprising an outer lamina 23 of impervious material and an inner porous or absorbent lamina 24 of a material which is either felt or woven (the wall of which includes a filamentary reinforcement surrounding a sealing skin) with a flowable resin material which subsequently hardens in the passageway via heating (a thermosetting resin is used) including transporting an apparatus for impregnating a tube 20 to the site of a passageway 15 to be lined with a tube 20 (the section of preform is brought close to the trench); introducing a substantial quantity of resin 136 in the leading end 21 of the tube 20 to form a bulge 200 of resin in the tube 20 before introducing the leading end 21 of the tube 20 into the passageway 15; passing the tube 20 through a throat 128 of a flattener 120 to flatten the tube 20 therein such that the resin 136 in the bulge 200 is spread transversely from side to side within the tube 20; and energizing a vacuum pump 162 of a vacuum system 160 to create a negative pressure which urges the fluid resin 136 to flow within the tube toward the opposite end whereby the combined action of the flattener 120 and the vacuum system 160 cause the resin thoroughly to impregnate the absorbent lamina 24 of the length of tube required to line the passageway 15 (the reinforcement is impregnated in situ with a curable resin; the impregnation of the resin is carried out under reduced pressure) (column 3, lines 1-10; column 7, line 34 - column 9, line 48). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use in situ thermosetting resin impregnation of the fibrous reinforcement in the process of Knowles as taught by Everson et al. to provide a matrix material for the fibrous reinforcement that was less susceptible to degradation in soil and to provide a tubular preform which does not have to be handled manually during installation thereby allowing convenient and rapid installation (see column 9, lines 49-57 of Everson et al.). Note that Knowles teaches a continuous process of laying a flattened tubular preform and Everson et al. teach a continuous process of impregnating in situ and laying a tubular preform; therefore, Knowles in view of

Art Unit: 1732

Everson et al. would obviously suggest impregnating and laying of a tubular preform in a flattened condition continuously.

Knowles in view of Everson et al. does not specifically teach that the section of preform is inflated pneumatically. However, Boyle teaches a method of making hollow objects, conduits and like including compactly winding a flexible tube 3 of collapsible material upon a reel 4 mounted on a suitable portable stand 5; paying out the tube 3 from the reel 4 through a suitable compression device such as a pair of compression rolls 6 into a trench or trough 1 wherein the tube 3 is flattened by the compression rolls 6 wherein the tube 3 may or may not be distended (the section of preform is brought close to the trench; the section of preform still in the flattened state is deposited from the top down into the trench); distending the tube 3 by air-pressure after forming an air tight connection with the end of the tube 3 to expand the tube into a cylindrical shape (the section of preform is inflated pneumatically, after having closed off the ends thereof, so as to give it a cylindrical shape); backfilling the trench 1 with cement; and allowing the cement to harden to form a completed cement conduit with a single duct formed by the tube 3 (page 1, line 60 - page 2, line 25). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to inflate the pipe in the process of Knowles in view of Everson et al. using air pressure as taught by Boyle to provide a cheaper alternative to water or steam for inflating the pipe.

Claims 10, 11 and 13

Knowles teaches an apparatus of installing a permanent conforming pipe (a plant used to lay a cylindrical pipe) for conducting fluids on soil 7 or in a trench or hole 8 (in a trench) including a pipe 1 (a section of flexible tubular preform) including outer and inner spaced parallel skins or surfaces 2 and 3 having an intermediate reinforcing layer 4 secured or sandwiched there between to form a tubular wall W (the wall of which is provided with a filamentary reinforcement); a movable long spindle assembly for storing the pipe 1 in a wound and flattened condition (which is initially folded on itself and flat, in the manner of a fire hose empty of water; a container for storing the folded section of preform; a mobile assembly capable of moving along the support); means for providing a pipe 1 in a flexible state (starting from a section of flexible tubular preform) by unwinding the pipe 1 from the long spindle into the trench (means for progressively pulling said section out of the container; this laying operation being carried out

Art Unit: 1732

without turned the wall section of preform over on itself); means for laying the pipe 1 out over a supporting surface such as soil 7 or in a hole or trench 8 such that the pipe 1 flexibly conforms to the surface irregularities of the supporting surface (a mobile assembly capable of moving along the support; means for depositing, still continuously, and from the top down, the section of preform prefurnished with resin into the trench and still in the flattened state); means for expanding the pipe 1 to a desired shape after laying (capable of being made round but not radially expansible by inflation due to the effect of internal pressure; means for inflating it, so as to give it a cylindrical shape, after it has been deposited in the trench); and means for curing the pipe 1 to rigidify the pipe 1 (means capable of cause the material to cure) (column 3, lines 1-18; column 4, lines 23-34; column 5, line 37 - column 6, line 2). Knowles further teaches that the reinforcing layer 4 may be a fibrous-web mat imbedded in cement (means for impregnating the filamentary reinforcement with curable material) (column 3, line 56 - column 4, line 4).

Knowles does not specifically teach a storage tank containing a curable resin, means for impregnating the filamentary reinforcement with curable resin wherein impregnation is done continuously and progressively as it is being extracted from the container, that the means for causing the resin to cure which are heating means, and a vacuum pump suitable for putting resin impregnation means under reduced pressure. However, Everson et al. teach an apparatus for impregnating a tube (flexible tubular preform) comprising an outer lamina 23 of impervious material and an inner porous or absorbent lamina 24 of a material which is either felt or woven (the wall of which is provided with a filamentary reinforcement) with a flowable resin material which subsequently hardens in the passageway via heating (a thermosetting-resin preform; means for causing the resin to cure are heating means) including a transportable apparatus for impregnating a tube 20 capable of being moved to the site of a passageway 15 to be lined with a tube 20 (a mobile assembly capable of moving along the support) having a skip 40 for storing the tube 20 in a folded and flattened condition (a container for storing the folded section of preform); a plurality of drums 137 containing a supply of liquid, unhardened resin 136 (a storage tank containing a curable resin); a resin insertion hose for introducing a substantial quantity of resin 136 in the leading end 21 of the tube 20 to form a bulge 200 of resin in the tube 20 after removing the tube 20 from the skip 40 and before introducing the leading end 21 of the tube 20 into the passageway 15; a flattener 120 having a throat 128 for flatten the tube 20 passing there between such that the resin 136 in the bulge

Art Unit: 1732

200 is spread transversely from side to side within the tube 20 (means for impregnating the filamentary reinforcement with curable resin, this being done continuously and progressively as it is being extracted from the container); and a vacuum system including a vacuum pump 162 for create a negative pressure which urges the fluid resin 136 to flow within the tube toward the opposite end whereby the combined action of the flattener 120 and the vacuum system 160 cause the resin thoroughly to impregnate the absorbent lamina 24 of the length of tube required to line the passageway 15 (means for impregnating the filamentary reinforcement with curable resin, this being done continuously and progressively as it is being extracted from the container; a vacuum pump suitable for putting the resin impregnation means under reduced pressure) (column 3, lines 1-10; column 7, line 34 - column 9, line 48). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a continuous impregnation system for in situ thermosetting resin impregnation of the fibrous reinforcement in the apparatus of Knowles as taught by Everson et al. to provide a matrix material for the fibrous reinforcement that was less susceptible to degradation in soil and to provide means for forming a tubular preform which does not have to be handled manually during installation thereby allowing convenient and rapid installation (see column 9, lines 49-57 of Everson et al.). Note that Knowles teaches a continuous apparatus for laying a flattened tubular preform and Everson et al. teach a continuous apparatus for impregnating in situ and for laying a tubular preform; therefore, Knowles in view of Everson et al. would obviously suggest an apparatus for impregnating and for laying of a tubular preform in a flattened condition continuously.

Knowles in view of Everson et al. does not specifically teach means for blowing compressed air into the section of preform for inflating the preform. However, Boyle teaches an apparatus for making hollow objects, conduits and like including a reel 4 mounted upon a suitable portable stand 5 having a compactly wound flexible tube 3 of collapsible material thereon; means for paying out the tube 3 from the reel 4 through a suitable compression device such as a pair of compression rolls 6 into a trench or trough 1 wherein the tube 3 is flattened by the compression rolls 6 wherein the tube 3 may or may not be distended (a container for storing the folded section of preform; means for progressively pulling said section out of the container; means for depositing, still continuously, and from the top down, the section of preform into the trench and still in the flatted state); means for distending the tube 3 by air-pressure after

Art Unit: 1732

forming an air tight connection with the end of the tube 3 to expand the tube into a cylindrical shape (means for blowing compressed air into the section of preform and for inflating it, so as to give it a cylindrical shape, after it has been deposited in the trench); means for backfilling the trench 1 with cement; and means for causing the cement to harden to form a completed cement conduit with a single duct formed by the tube 3 (page 1, line 60 - page 2, line 25). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to air-pressure inflation means in the apparatus of Knowles in view of Everson et al. as taught by Boyle to provide a cheaper alternative to water or steam for inflating the pipe.

10. Claim 5, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,752,431 (Knowles) in view of U.S. Patent No. 4,182,262 (Everson et al.) and U.S. Patent No. 830,204 (Boyle) and U.S. Patent No. 5,451,351 (Blackmore).

Claim 5

The discussion of Knowles, Everson et al. and Boyle as applied to claims 1-4 above applies herein.

Knowles in view of Boyle and Everson et al. does not specifically teach that the resin is cured by heating, by the Joule effect, by means of electrical resistance elements incorporated into the filamentary reinforcement. However, Blackmore teaches a method of lining a pipe in situ including forming a composite liner 20 comprising including a first layer of polyester 22, a layer of woven graphite fiber 24 and a second layer of polyester; placing the composite liner 20 on a bladder 30; impregnating the composite liner 20 supported by the bladder 30 with a two part thermal setting resin system in a resin impregnator; pulling the resin impregnated liner 20 through and positioning the resin impregnated liner 20 within the interior of a pipe line section 38; inflating the bladder to expand the resin impregnated liner 20 into the desired shape; coupling power lines 74, 76 to a conventional power source and to the graphite fiber layer 24 to create an electrical circuit; and inducing an electrical current using the power source through the woven graphite fiber layer 24 sufficient to cure or enhance curing of the resin impregnated in the liner 20 (the resin is cured by heating, by the Joule effect, by means of electrical resistance elements incorporated into the filamentary reinforcement) (column 3, line 57 - column 5, line 30). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill

Art Unit: 1732

would have been motivated to use an electrically conductive fiber reinforcement in the pipe of Knowles in view of Everson et al. and Boyle and to cure the impregnated material by heating the electrically conductive fiber reinforcement as taught by Blackmore to reduce the curing time of the impregnated material (see column 2, lines 14-29 of Blackmore).

Claims 12 and 13

The discussion of Knowles, Everson et al. and Boyle as applied to claims 10, 11 and 13 above applies herein.

Knowles in view of Boyle and Everson et al. does not specifically teach that the heating means are electrical means, capable of heating the resin by the Joule effect, via resistance heating elements incorporated into the reinforcement. However, Blackmore teaches an apparatus for lining a pipe in situ including a composite liner 20 comprising including a first layer of polyester 22, a layer of woven graphite fiber 24 and a second layer of polyester; a bladder 30 upon which the composite liner 20 is mounted; a resin impregnator for impregnating the composite liner 20 supported by the bladder 30 with a two part thermal setting resin system; means for pulling the resin impregnated liner 20 through and positioning the resin impregnated liner 20 within the interior of a pipe line section 38; means for inflating the bladder to expand the resin impregnated liner 20 into the desired shape; and power lines 74, 76 coupled to a conventional power source and to the graphite fiber layer 24 to create an electrical circuit wherein an electrical current conducted through the woven graphite fiber layer 24 using the power source sufficient to cure or enhance curing of the resin impregnated in the liner 20 (said means are electrical means, capable of heating the resin by Joule effect, via resistance heating elements incorporated into the reinforcement) (column 3, line 57 - column 5, line 30). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to provide an electrically conductive fiber reinforcement in the pipe of Knowles in view of Everson et al. and Boyle for curing the impregnated material by heating the electrically conductive fiber reinforcement as taught by Blackmore to reduce the curing time of the impregnated material (see column 2, lines 14-29 of Blackmore).

Art Unit: 1732

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 2,718,684 (Bjorksten), U.S. Patent No. 3,203,188 (Evans), U.S. Patent No. 3,823,565 (Takada), U.S. Patent No. 3,876,351 (Takada), U.S. Patent No. 4,867,921 (Steketee, Jr.), U.S. Patent No. 5,010,440 (Endo), U.S. Patent No. 5,671,778 (Sakuragi et al.), U.S. Patent No. 5,765,597 (Kiest, Jr. et al.), Great Britain Patent No. 2,213,228 A (Finnerty et al.), and European Patent Application No. EP 0856694 A1 (Chandler) have been cited of interest to show the state of the art at the time the invention was made.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael I Poe whose telephone number is (571) 272-1207. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Poe/mip



MICHAEL COLAIANNI
PRIMARY EXAMINER